8. An excimer or molecular fluorine laser, comprising:

a laser tube filled with a laser gas;

an optical resonator;

a discharge circuit; and

a plurality of electrodes within the laser tube connected to a discharge circuit for exciting the laser gas to produce a laser output beam, said discharge circuit including a solid state switch configured to switch a voltage needed to produce desired pulse energies,

wherein an additional load is coupled between the main discharge electrodes and peaking capacitors from which current pulses are applied to the electrodes.

10. An excimer or molecular fluorine laser, comprising:

a laser tube filled with a laser gas;

an optical resonator;

a discharge circuit; and

a plurality of electrodes within the laser tube connected to a discharge circuit for exciting the laser gas to produce a laser output beam, said discharge circuit including a solid state switch configured to switch a voltage needed to produce desired pulse energies,

wherein peaking capacitors from which current pulses are applied to the electrodes are positioned as close as possible to the electrodes, and sustainer capacitors, also from which current pulses are applied to the electrodes, have an enlarged inductance between them and the discharge electrodes for extending the current pulse.

14. An excimer or molecular fluorine laser, comprising:

a laser tube filled with a laser gas;

an optical resonator;

a discharge circuit;

a plurality of electrodes within the laser tube connected to the discharge circuit for exciting the laser gas to produce a laser output beam, said discharge circuit including a solid state switch configured to switch between half and a quantity less than a voltage needed to produce desired pulse energies, the switch comprising a plurality of insulated

gate bipolar transistors (IGBTs) including a parallel combination and each path of the parallel combination includes a single IGBT, and

wherein the discharge circuit includes a voltage doubling circuit configured to approximately double the voltage signal applied to a pulse compressor circuit before the pulse reaches the electrodes.

30. An excimer or molecular fluorine laser, comprising:

a laser tube configured to be filled with a laser gas;

an optical resonator; and

a plurality of discharge electrodes disposed within a discharge chamber, the chamber including a pair of discharge electrodes coupled to a discharge circuit for exciting the laser gas for generating a laser output beam, the discharge circuit including a solid state switch comprised of a plurality of insulated gate bipolar transistors (IGBTs) configured to switch a voltage signal of between 12 and 25 kV, the switch including a parallel combination and each path of the parallel combination includes a single IGBT.

35. The laser of claim 30, wherein the plurality of IGBTs includes at least two IGBTs connected in series.

36. The laser of Claim 30, wherein the plurality of IGBTs includes at least three series combinations of a single IGBT connected in parallel.

37. The laser of Claim 1, said all solid state switch configured to switch said voltage needed to produce said desired pulse energies without having a step-up transformer disposed within the circuit after the switch.

38. The laser of claim 37 wherein said solid state switch includes a series of insulated gate bipolar transistors (IGBT), said discharge circuit not including a step up voltage transformer.

39. The laser of claim 38 wherein said series of IGBTs are configured to switch a voltage signal of approximately 20 kV.

40. The laser of claim 39 wherein the solid state switch has a rise time of less than 100 ns.

41. The laser of claim 37 further including a voltage doubling circuit for doubling the voltage signal applied to the pulse compressor circuit before the pulse reaches the pair of electrodes.

42. The laser of claim 41 wherein said doubling circuit includes a pair of capacitors.

43. The laser of claim 42 wherein said solid state switch includes at least three parallel paths each including a single IGBT.

44. The laser of claim 43 wherein said series of IGBTs are configured to switch a voltage signal of approximately 20 kV.

45. The laser of Claim 1, wherein the discharge circuit comprises:

said solid state switch for switching an electrical pulse provided by a main storage capacitor charged by a power supply;

a voltage doubling circuit including a pair of capacitors for doubling the voltage of the pulse switched by the solid state switch; and

a pulse compression circuit for compressing the pulse for application to the electrodes.

47. The laser of Claim 1, wherein the discharge circuit comprises:

said solid state switch including said plurality of IGBTs for switching an electrical pulse provided by a main storage capacitor charged by a power supply, said electrical pulse having sufficient energy to produce laser pulses of desired energies without disposing a step-up transformer in the discharge circuit after the switch; and

a pulse compression circuit for compressing the pulse for application to the electrodes.

58. The laser of Claim 1, wherein said switch further includes a series combination of at least two IGBTs in parallel with said other paths.